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ABSTRACT

This survey of North Carolina farmers focuses on the impact of important social changes and their interplay with ongoing changes in agriculture. It provides information for policymakers and education researchers to prepare for possible changes in the rural education system. State farmers were interviewed in 1987 and again in 1988. Of 883 people who completed the first of two telephone interviews, 158 had left agricultural production by the following year. Farmers were generally more optimistic about their future in 1988. Farm income averaged about 50% of total family income. Only 28% of the farmers reported that farming generated more than 80% of the family income. Farmers seemed to have been avoiding the risk of new commodities. Only 6% indicated starting new crop or livestock activities during the previous 2 years. About 40% of the farmers reported debts as of January 1988, with most owing less than $40,000. Most farmers did not report any severe economic hardships during 1987. Substantial differences existed among farmers and ex-farmers. Ex-farmers were slightly older, had small farms and lower incomes, and were more likely to be black or female. Only 36% of farmers reported having a land conservation plan. Farmers in the northeastern district reported the most serious drought losses. Peanut and soybean producers reported more losses than producers of other commodities. Almost 80% reported they had not received any federal drought assistance. More than 40% of farm operators reported "very high" or "high" levels of stress. Eight of 10 farmers reported having "good" or "fair" health. Almost half of the farm operators reported that they could not read at a level they feel is adequate. Results suggest that 7-12% of the respondents were illiterate. (TES)

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North Carolina

Farm and Rural Life Study

1988 Summary Report

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Introduction

Change is constant in agriculture. Prices, markets, weather, labor, and many other important factors vary with time and geography. Changes may occur in somewhat regular cycles or may be abrupt and unforeseen. Each change has important effects on the farm operation as well as the farm family. At the same time, larger societal changes, outside of agriculture, affect farming and the people who live and work on farms.

The North Carolina Farm and Rural Life Survey, a cooperative extension and research project of the Department of Sociology, Anthropology, and Social Work at North Carolina State University, is focusing on the impact of some of the more important changes in society and their interplay with ongoing changes in agriculture. We hope to shed some light on how farm families react to change and add to continuing discussions of what public policies may be needed to address these issues.

Summary

- In January and February 1987, 977 North Carolinians who either operated a farm in 1986 or recently left farming were contacted by telephone. Respondents were interviewed again in January and February 1988. Of the 883 persons who completed the 1987 interview, 725 were farm operators and 158 had left agricultural production. In 1988, 795 people completed the interview, of whom 597 were operators and 198 had left farming. Reasons for leaving agriculture included age or retirement and low income from farming. Two of the respondents not operating a farm in 1986 reported that they did farm in 1987.

- Farmers were more optimistic about their future in farming in 1988 than in 1987. In 1987, almost 60 percent saw their future as doubtful, only 26 percent saw it as hopeful, and 11 percent were satisfied with their situation. In 1988, however, only 30 percent saw their future in farming as doubtful, 33 percent saw the future as hopeful, 25 percent were "satisfied with the way things are," and fewer than 4 percent indicated that they would not farm in the future.

- In terms of off-farm work there were two groups of farm operators. The larger group (72 percent) worked little or not at all in the nonfarm sector, and a small but still substantial group (28 percent) worked practically full time in the paid labor force. Overall, in 1987, 40 percent of operators worked off of the farm. Of these, most (71 percent) worked off of the farm more than 200 days during the year.

- Income from the farm averaged about 50 percent of total family income. Only 28 percent of the farmers reported that farming generated more than 80 percent of family income. Most households combined some off-farm employment with farming to generate sufficient income.

- Farmers seemed to have been avoiding risks associated with new commodities. Only 6 percent indicated beginning new crop or livestock activities during the past two years. Similarly, few farmers had tried any new marketing strategies.

- About 40 percent of the farmers reported having farm debts as of January 1, 1988. Most operators owed less than $40,000, but one-fifth owed $100,000 or more. Most farmers did not report any severe economic hardships during 1987. About half of the farmers said that their family finances had stayed the same.

- There were substantial differences among farmers and ex-farmers. Ex-farmers had smaller farms and lower incomes, were slightly older, and were more likely to be black or female. Comparisons of off-farm work experience between the two groups revealed that current operators were more likely than ex-operators to hold lower white collar occupations, while ex-operators were more likely to be employed in blue collar positions. In general, ex-farmers did not fare as well economically as those who continued to farm.

- Only 36 percent of the farm operators reported having a conservation plan. Of the 391 farmers without plans, about one-third reported that they had considered developing one. One important influence on farmer adoption of a conservation plan appeared to be personal contacts with the Agricultural Extension Service.

- Farmers in the northeastern district reported the most serious drought losses. Peanut and soybean producers reported losses more than producers of other commodities. Almost 80 percent of the farmers reported that they had not received any federal drought assistance.

- More than 40 percent of farm operators reported "very high" or "high" levels of stress. Eight out of 10 farmers reported having "good" or "fair" health.

- Almost half of the farm operators reported that they cannot read at a level they feel is adequate. Results suggest that between 7 and 12 percent of the respondents were illiterate.

Overview of Respondent Characteristics

In January and February 1987, 977 North Carolinians who either operated a farm in 1986 or recently left farming were contacted by telephone. Respondents were interviewed again in January and February 1988. The outcomes are reported in Table 1. Of the 883 persons who completed the 1987 interview, 725 were farm operators and 158 had left agricultural production. In 1988, 795 people completed the interview, of whom 597 were operators and 198 had left farming. Two respondents not operating a farm in 1986 reported that they did farm in 1987. Questions asked in each year referred to the previous year's farm operations and conditions.

Table 1. 1987-88 Sample Disposition

Sample Disposition		Number	Percentage of Sample
1987			
Completed interview		883	90.4
Farming	725		
Not farming	158		
Did not complete interview		94	9.6
		977	100.0
1988			
Completed interview		795	90
Farming	597		
Not farming	198		
Did not complete interview		88	10
		883	100.0

Demographic Characteristics of Farm Operators

Demographic characteristics of the 1987 and 1988 survey respondents were compared with reported characteristics of North Carolina farm operators from the 1982 Census of Agriculture. As expected, the three samples differed little in terms of gender, race, and age distributions (Table 2). Respondents were predominantly male (92 to 93 percent) and white (92 percent) with an average age of about 54 to 55 years.

Table 2. Demographic Characteristics of Farm Respondents from the 1987 and 1988 Surveys and 1982 Census of Agriculture Results

	1987 (N = 725)	1988 (N = 595)	1982 Census
	(Percentage)		
GENDER			
Male	92	92	94
Female	8	8	6
RACE			
White	92	93	93
Black or other	8	7	7
AGE			
Under 25 years	0.3	0.3	2
25 to 34 years	7	6	12
35 to 44 years	16	16	19
45 to 54 years	26	26	22
55 to 64 years	32	32	25
65 and older	19	19	20
Average age	54 years	55 years	52 years
LABOR			
No off-farm work	42.2	60.2	42.5
Any off-farm work	57.8	39.7	57.5
1 to 99 days	15.7	14.4	18.8
100 to 199 days	23.9	14.8	14.9
200 or more days	60.4	70.9	66.3
FARM SIZE			
1 to 9 acres	9.9	7.1	9.2
10 to 49 acres	32.7	31.7	32.0
50 to 99 acres	18.6	19.5	22.6
100 to 219 acres	19.1	16.6	20.2
220 to 499 acres	9.9	13.9	10.8
500 to 1,999 acres	9.1	11.0	4.8
2,000 or more acres	0.7	0.3	0.4

However, there were differences between the 1987 and 1988 samples in the amount of off-farm work reported. In 1987, about 58 percent of farm operators worked off of the farm. In 1988, only 40 percent reported off-farm work. In addition, of

those operators who worked off of the farm in 1988, 7 of 10 worked 200 or more days, essentially full-time, compared with 60 percent in 1987. Farmers who did work off of the farm tended to work more days in nonfarm jobs during a somewhat difficult year (1987) in agriculture.

Literacy

We asked two questions to gauge literacy among the farm population. The first question asked how much time the respondent spent reading at home. The second question asked if the respondent considered himself a good, fair, or poor reader. The response patterns were nearly identical for current and former operators, and so the following discussion of literacy combines the two into one group (Tables 3 and 4).

Table 3. When You Are at Home, Do You Spend Much Time Reading?

	Number	Percentage
Every day	468	59.0
Once in a while	267	33.7
Not at all	57	7.2
Total	792	100.

Table 4. How Would You Rate Your Ability to Read?

	Number	Percentage
Good	417	52.4
Fair	276	34.7
Poor	102	12.8
Total	795	100.

The results suggest that between 7 and 12 percent were illiterate by the criteria of never reading and rating themselves as "poor" readers. More serious, perhaps, was the large minority of farmers that rated themselves as fair or poor readers. Almost half could not read at a level that they felt was good.

Demographic Characteristics of Ex-Farmers

Two groups of ex-farmers were considered in this section. The first consisted of those who left farming before 1986, and the second was made up of those who were farming in 1986 but did not farm in 1987 (Table 5). In the two surveys, 198 people reported that they were no longer farming—123 left before 1987 and 75 left during 1987. The two groups differed little. A very large proportion of both groups were white, male, and married, with most having at least a high-school education. Those who left in 1987 were younger than those who had left earlier, a finding that was expected because some of those who left farming before 1987 had not farmed for several years. Significant differences, however, were found between those who left and those who remained, as will be discussed later in this report.

Table 5. Demographic Characteristics of Ex-Farmers

	Pre-1987 Exit	1987 Exit
	(Percentage)	
GENDER		
Male	92.1	89.3
Female	7.9	10.7
RACE		
White	88.8	84.0
Black or other	11.2	16.0
MARITAL STATUS		
Married	83.7	90.7
Widowed	10.6	5.3
Separated	0.8	0.0
Divorced	3.3	1.3
Never married	1.6	2.7
EDUCATION		
Less than high school	25.2	24.0
Some high school	16.3	8.0
High-school graduate	41.5	42.7
Some college	13.3	10.7
College graduate	2.2	10.7
Completed postgraduate degree	1.5	4.0
AGE		
Under 25 years	0	0
25 to 34 years	4.1	1.3
35 to 44 years	10.5	12.0
45 to 54 years	14.7	22.7
55 to 64 years	21.9	38.7
65 years and older	48.8	25.3

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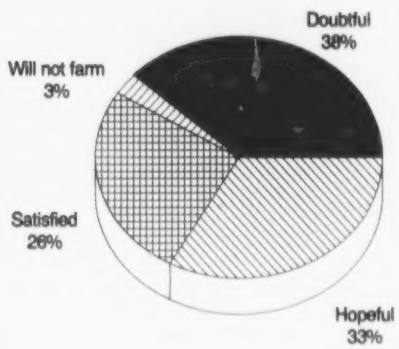
Future of Farming

When asked "How do you see your future in farming?" 38 percent of the farm operators in 1988 replied "Future doubtful" (Figure 1). Another 33

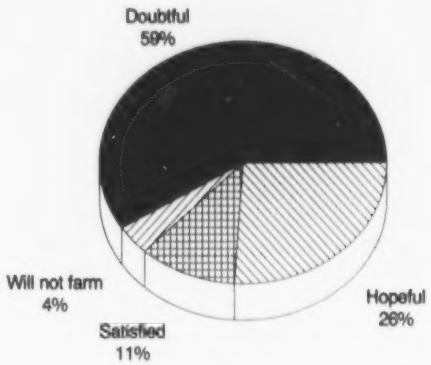
Figure 1. Responses in 1988 to the question, "How do you see your future in farming?"



percent saw the future as hopeful, 25 percent were "satisfied with the way things are," and fewer than 4 percent indicated that they would not farm in the future. Responses to this question differed markedly from the responses received in 1987. In 1987, almost 60 percent of farm operators saw their future in farming as doubtful, only 26 percent as hopeful, and 11 percent were satisfied with their situation (Figure 2). Clarifications of some agricultural policies, higher farm income, and perceived stability of other factors affecting the farm operation may have resulted in a more optimistic outlook for farmers in 1988 than in 1987.

Respondents remained mostly pessimistic, however, about "whether farming is a real option for the next generation." In 1988, 60 percent of farm operators did not consider farming to be a viable career option for young people, compared with 64 percent in 1987. Yet more people seemed to be optimistic about the future generation's opportunities in agriculture. The percentage answer-

Figure 2. Responses in 1987 to the question, "How do you see your future in farming?"



ing "yes" increased from 23 to 35 between 1987 and 1988, and the percentage answering "maybe" dropped from 13 to 5 (Figures 3 and 4).

The question about farming as an option for the next generation was followed by an open-ended question asking respondents to explain their

Figure 3. Responses in 1987 to the question, "Is farming an option for the next generation?"

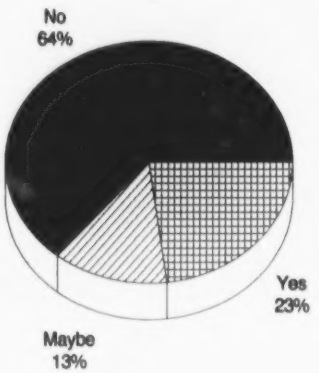


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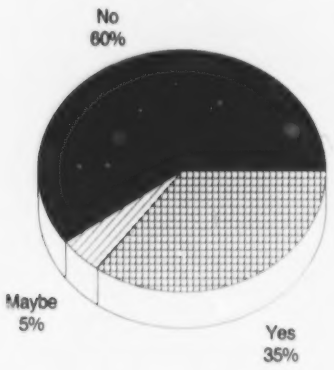
Figure 4. Responses in 1988 to the question, "Is farming an option for the next generation?"



answers. Table 6 shows the most common answers from the 1988 farm operators. Of those who viewed farming as a viable option, 52 percent mentioned that farming is a necessity and someone will need to do it. Another 30 percent thought that economic conditions would improve, and 13 percent said that farming provided a "good life." On the other hand, respondents who did not see farming as an option most commonly mentioned the lack of profit, high expenses, and low prices as major deterrents.

Table 6. Reasons Given for Why Farming May or May Not Be an Option for the Next Generation

Will Be a Viable Option

Reason	Percentage
Farming is a necessity	52
Things will get better economically	30
Farming is a good life	13

Will Not Be a Viable Option

Reason	Percentage
Not profitable	35
Expenses are too high	13
Prices are too low	12

Both sets of explanations to the question on options were similar to results from the 1987 survey. The major differences were the wider variety of responses in 1988 compared to 1987 and that "low prices" was mentioned more often than "poor markets" as a reason to view farming as a less viable option for the next generation.

Respondents also were asked, "If you could go back and start all over again, would you still go into farming?" Although relatively large proportions of farm operators were pessimistic about their own and the next generation's future in farming, a majority said that they would start again in farming. As in 1987, among those 1988 respondents who said yes, a majority listed reasons that reflected positive attitudes toward farming, such as "living the good life" or "enjoying the freedom" it provides. Among the current farmers who answered no to this question, the responses were almost equally split between "too much uncertainty in farming" and "too much work and too little pay." Clearly this question struck the same chord among 1987 respondents—those who would not farm again focused primarily on economic reasons, whereas the majority who would remain in farming focused on nonmonetary aspects such as being one's own boss or working outdoors.

Major Problems of Farm Families

In the 1988 survey, farm operators were asked "In your opinion, what are the major problems of farm families?" Many answers were given, but more than half of the operators mentioned economic concerns, such as "low profits," "not enough money for products," "not enough money for the work," or "high expenses and high cost of labor and materials." About one-third of the responses were concerned with low profits in agriculture (Figure 5).

Use and Evaluation of the Extension Service

The North Carolina Agricultural Extension Service has offices in every county. These offices provide farmers with information and assistance in a number of farm management and production areas. About one-half (48 percent) of the respondents reported that they had read Extension publications or attended Extension-sponsored meetings in the last year.

To generally assess farmers' opinions about the Extension Service, respondents were asked

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Figure 5. Responses in 1988 to the question, "What are the major problems of farm families?"

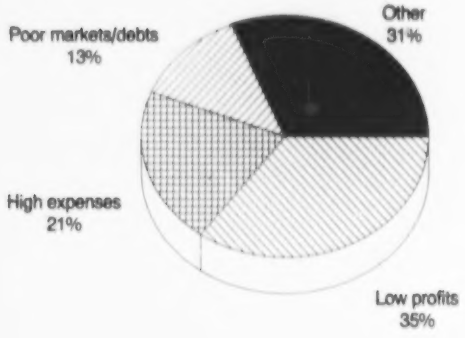
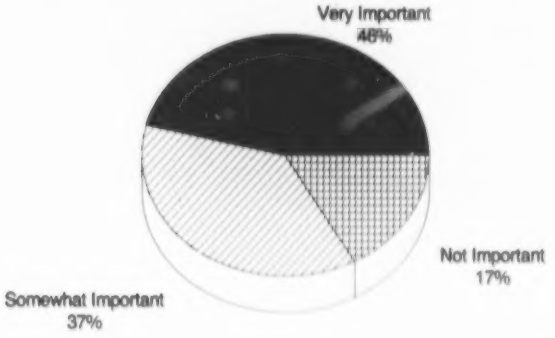


Figure 6. Responses to the question, "How important do you feel your contacts with Extension are to your farming operation?"



"How important do you feel your contacts with Extension are to your farming operation?" As shown in Figure 6, farmers are positive in their evaluation of Extension. Almost one-half (46 percent) felt their contacts with Extension were very important to their operation. Another one-third (37 percent) said their contacts were somewhat important. Less than 20 percent said their contacts were not important.

Farm Operation Characteristics

This section examines characteristics of the farms owned by the 595 operators who were farming during both survey years. For 1987, the mean number of acres farmed (both owned and not owned) was 186. Approximately 58 percent reported farming less than 100 acres. The average number of acres owned was 85, and about three-quarters of the farmers reported owning less than 100 acres (Figure 7).

Operator Employment and Earnings

In 1987, 39.8 percent of operators worked off of the farm. Of these 237 farmers, 50 (21 percent) were self-employed. In addition, 44 percent of the operators who worked off of the farm reported some supervisory responsibility on those jobs. Of the operators who worked at nonfarm jobs, most (71 percent) worked off of the farm more than 200 days in 1987 (Figure 8).

In terms of off-farm work, there were clearly two groups of farm operators. The larger group worked little or none in the nonfarm sector (72 percent) and the smaller but still substantial group (28 percent) worked practically full time in the paid labor force. The distribution of off-farm work for operators' spouses was nearly identical: 33 percent worked off of the farm over 200 days per year. In addition, 120 operators had some other family member working off of the farm during 1987. Only

Figure 7. Acres farmed and acres owned, 1987.

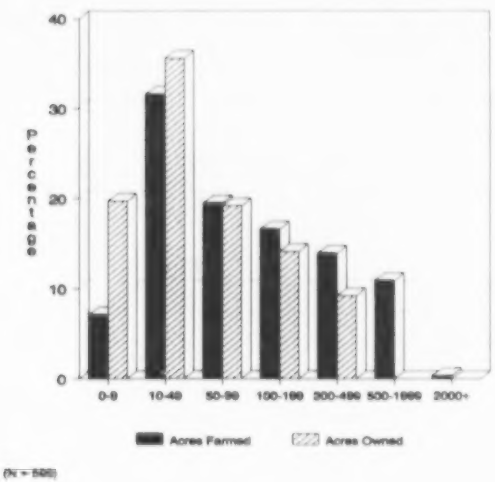
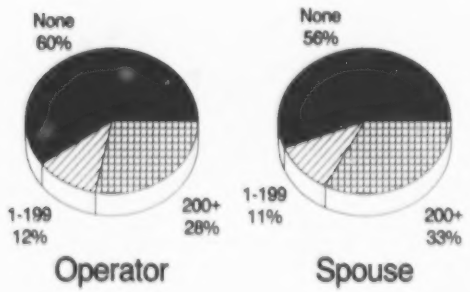


Figure 8. Days worked off-farm in 1987.



30 percent of farms had no members of the family doing off-farm work.

Employed respondents were found in a variety of occupations ranging from teachers and business managers to laborers and factory workers. Twenty-six (11 percent) were employees on other people's farms or worked in agriculture-related occupations, including forestry or fishing. About half (47 percent) were employed in some form of manual labor, including farm and related occupations (8 percent), skilled construction work (13 percent), skilled factory work (2 percent), semi-skilled factory and transportation jobs (16 percent), and laborers (5 percent). Thirteen percent were employed as white collar workers (managers, administrators, and professionals). The remainder of operators' off-farm occupations included white collar occupations such as administrative support (10 percent), sales (10 percent), and service (8 percent), as shown in Table 7.

Table 7. Operators' Off-Farm Occupations

Occupation Group	Frequency	Percentage
Officials, administrators, managers	14	5.9
Professionals	17	7.2
Technicians	4	1.6
Sales	26	10.1
Administrative support (includes clerical)	23	9.7
Service	19	8.0
Farm managers and other agriculture-related	20	8.4
Forestry, logging, fishing	6	2.5
Mechanics and repairers	23	9.7
Skilled construction trades	31	13.2
Skilled factory	4	1.6
Semiskilled factory and transportation	38	16.0
Laborers	12	5.1
Military (reserve)	2	0.8
Total	237	100

Farm and Family Income

Median gross farm income in 1987 was about $30,000. The majority reported gross farm income of under $40,000 (Figure 9). The percentage of total net family income from farming averaged 48 percent.

Median family income was also about $30,000. Ten percent had total family income below $10,000. On the other end of the income distribution, 21 percent reported a total family income in 1987 of over $60,000 (Figure 10).

Only 28 percent of the sample reported that farming generated over 80 percent of family income. In 44 percent of farm households farm income accounted for over half of family income. Most households combined some off-farm employment with farming to generate sufficient income (Figure 11).

Figure 9. Gross farm income.

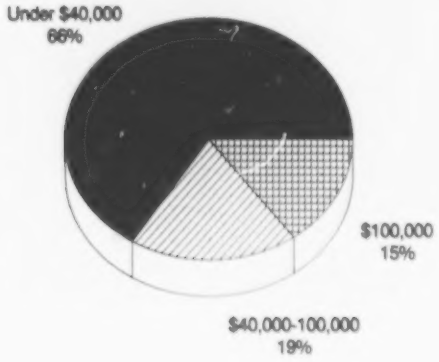
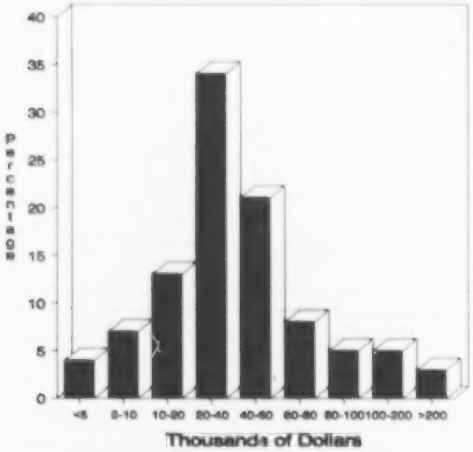


Figure 10. Total family income of farm operators in 1987.

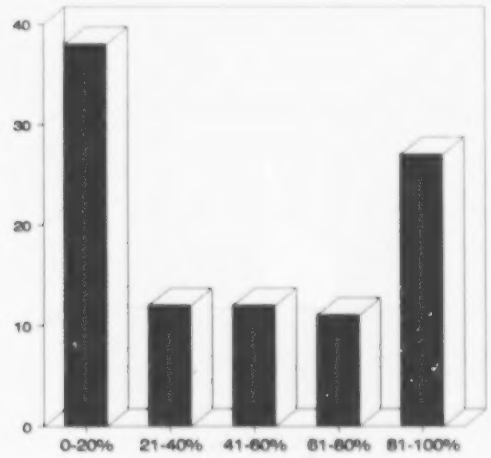


Tobacco and Other Commodities

When asked, "Do you currently own a tobacco allotment?" 48 percent of the operators said yes. Most allotment owners planned to plant tobacco in 1988 (62 percent). Approximately 29 percent said they would rent their allotments, 3 percent were planning to sell their allotments, and the remainder (5 percent) had other plans or reported not knowing what they planned to do with their allotments in 1988.

Thirty-six percent of farm operators listed tobacco as the most important 1987 commodity for their gross farm income. Beef cattle ranked second, at 23 percent. Other commodities that were ranked "most important" by 4 to 7 percent of the respondents included corn, soybeans, swine, poultry, and wheat or other grains.

Figure 11. Percentage of total farm income derived from farming.



One possible way to maintain a profitable farm is to diversify the operation by raising new crops or livestock. To determine the extent to which farmers in our sample had diversified during the recent financial crisis, we asked, "During the last two years did you grow any crops or produce any livestock on your farm that you had not in the past?" Only 33 of the respondents (6 percent) had diversified.

Those who had diversified were then asked "What new crops or livestock did you raise?" The responses indicated only limited diversification into nontraditional commodities. Table 8 shows that the crops and livestock reported were fairly traditional. Farmers in this sample appear to have been avoiding risky ventures during adverse economic conditions.

Another way of improving profitability and competitiveness of a farm operation is through better marketing techniques. Respondents were asked, "During 1987 did you pursue any new strategies for marketing your farm products?" Most (95 percent) said they had not used any new strategies. Of those 31 farmers who did, 8 reported using forward contracting, 2 used futures contract-

Table 8. New Crops or Livestock Raised

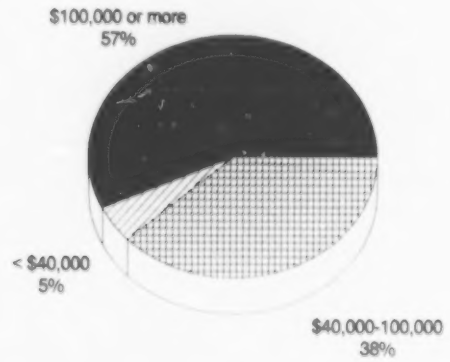
Commodity Raised	Number Reporting
Fruits or vegetables	7
Wheat or small grains	6
Beef cattle	5
Swine	4
Cotton	3
Other	3
Sheep	2
Corn	2
Poultry	1
Soybeans	1

ing, and 5 were involved with commodity trading. About half (16) reported using some other marketing strategy.

Value of Farm

Respondents were asked how much they would be willing to pay for their farm if it were for sale and if they were in the market for a farm. The mean was $144,000 and a majority (57 percent) reported the value of their farms as over $100,000 (Figure 12).

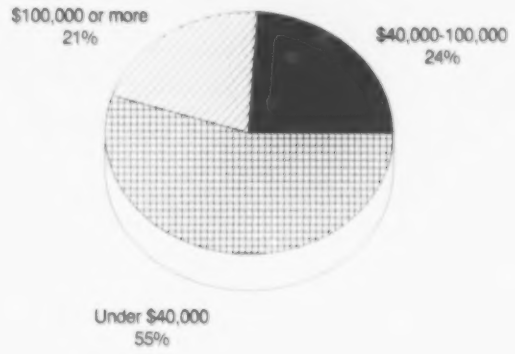
Figure 12. Perceived value of farm.



Debt

About four in ten respondents reported having farm debts. Of those with debt, the average was about $65,000. Most operators with debts owed less than $40,000, but one-fifth owed $100,000 or more (Figure 13).

Figure 13. Total reported farm debt.



The information on farm debt and on the self-reported market value of the farm can be used to calculate a ratio of debt to market value (debt was divided by market value and multiplied by 100). These figures represent a crude debt-to-asset ratio and should be interpreted cautiously because they do not take into account other assets, especially nonfarm property (Table 9).

Table 9. Ratio of Total Farm Debts to Market Value of Farm

Ratio	Percentage of Total Respondents (N=591)	Percentage of Respondents with Debts (N=221)
None (no debt)	63	—
01 to 39	10	27
40 to 59	9	25
60 to 99	12	32
100.0 or more	6	16

A ratio of 40 or greater was considered to be a general indicator of a high-risk farm financial situation. Data show that 73 percent of farm operators had a ratio of 39 or less, and 27 percent had a ratio of 40 or greater.

Approximately 24 percent of all respondents reported using some form of credit for operating expenses in 1987. Of those using credit (142), the

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average borrowed was about $36,500. The majority (74 percent) borrowed under $40,000. Private banks were the most prevalent source of credit (51 percent of those borrowing), followed by land banks or farmer exchanges (26.1 percent) and dealers (9 percent).

Financial Strategies

Respondents answered yes or no to 10 questions about farm financial strategies during 1987. Table 10 shows that the prevalent strategy during 1987 was to postpone farm and household purchases.

Table 10. Farm Financial Strategies

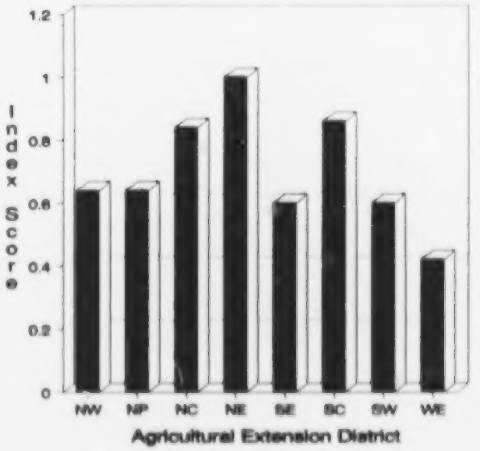
Strategy	Percentage
Postpone interest payment on loans	4.7
Restructure loans	10.6
Become delinquent on principal payment	4.9
Defer a FHA loan	3.9
Postpone major farm purchases	16.3
Postpone major household purchases	11.9
Have family member take off-farm job	4.9
Purchase more items on credit	3.0
Let life insurance lapse	2.7
Sell some land	4.2

(N = 594)

Because the financial strategy categories were not mutually exclusive, a summary index was created from the 10 questions. Each yes response was coded 1, all other responses were coded 0, and the index was summed for all 10 items. Sixty-five percent of the respondents had a total score of 0, indicating that they did not engage in any of the 10 financial strategies. Many farmers engaged in more than one type of strategy to survive financial difficulties. Eighteen percent had an index score of 1, 13 percent had scores of 2 through 3, and 4 percent had scores of 4 or above. A breakdown of results by Extension district* reveals that farm operators in the northeastern, south central, and north central districts had the highest means on the index (Figure 14).

*Throughout this report, Agricultural Extension districts are abbreviated as follows: NW, northwest; NP, northern piedmont; NC, north central; NE, northeastern; SE, southeastern; SC, south central; SW, southwestern; WE, western.

Figure 14. Financial strategies index by Extension districts.



Economic Difficulties

In addition to questions about financial strategies, farm operators answered questions about the economic hardships they experienced during the past 12 months. As shown in Table 11, the vast majority did not perceive any economic hardships with regard to food, clothing, or medical care for their families. Seventeen percent, however, did experience some kind of hardship.

Table 11. Perceived Economic Hardship

	Percentages		
	Often	Sometimes	Never
Had too little money to afford the kind of food you thought your household should have.	3.4	9.9	86.7
Had too little money to afford the kind of medical care you thought your household should have.	3.4	11.3	85.3
Had too little money to afford the kind of clothes you thought your household should have.	3.0	16.7	80.3

N=593

To assess economic difficulties, a question was asked about changes in family finances over the past year. The majority (57 percent) said their family finances had stayed the same, 29 percent

said their finances had improved, and 15 percent said their finances had gotten worse.

The responses to the four economic items were combined into a summary index. For each item, a response of never received a score of 1, a response of sometimes received a score of 2, and a response of often received a score of 3. Possible scores ranged from 0 to 9. Sixteen percent of respondents fell into the high range, indicating high levels of perceived hardship. A breakdown by Extension district shows that farm operators in the northeastern district had the highest mean level of perceived economic hardship. Northeastern farm operators also had the highest means on the farm financial difficulties index (Table 12).

Table 12. Perceived Economic Hardship Index by District

	District							
	NW	NP	NC	NE	SE	SC	SW	WE
Mean economic hardship	5.5	5.4	5.5	5.7	5.5	5.5	5.4	5.3

Respondents Who Left Farming Before 1987

The first wave of data collection in 1987 identified 158 former farm operators who stopped farming in 1986 or earlier. An attempt was made in 1988 to locate these respondents. One hundred twenty-five were located and interviewed. Of these, two had returned to agriculture in 1987. The remainder (123) were interviewed in 1988 with a supplemental form of the questionnaire. Seventy-five respondents farmed in 1986 but did not farm in 1987. These plus the 123 former farm operators who were contacted made a total of 198 who had ceased farming.

Employment and Earnings

Of the 198 former farm operators, 42 percent said they were working, 49 percent were retired, 11 percent were disabled, and 2 percent were looking for work. Of the respondents who said they were working (84), the mean number of days worked in 1987 was about 260. A majority worked more than 200 days.

In 1987, 42 percent of former operators were employed. Of these 198 ex-farmers, 25 percent were self-employed. In addition, 39 percent of the working ex-operators reported some supervisory responsibility on their off-farm jobs. Only a small group of ex-operators (9 percent) reported having participated in job training programs in the last two years.

Employed ex-operators were involved in a variety of occupations, ranging from lawyers and college teachers to laborers and factory workers. Only a small group of ex-operators (10 percent) were employees on other people's farms or worked in agriculture-related occupations, such as forestry or fishing. Well over half (62 percent) of working ex-operators were employed in some form of manual labor, including skilled construction work (12 percent), skilled factory work (4 percent), semi-skilled factory and transportation jobs (24 percent), and general labor (4 percent). Only 6 percent of ex-operators were employed as professionals. The remainder of ex-operators' occupations included other white collar employment such as administrative support (11 percent), sales (11 percent), and service (10 percent), as shown in Table 13.

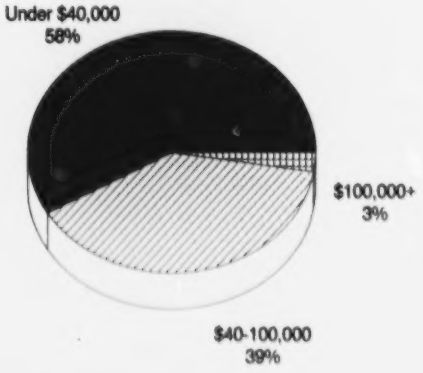
Farm and Family Income

Average gross farm income in the last year farmed was almost $19,000. The vast majority of the former operators had gross farm incomes of under $40,000 in the last year they farmed (Figure 15). The median family income of the ex-operators was about $15,000. Thirty-two percent of the ex-

Table 13. Employed Ex-Operators' 1987 Occupations

Occupation Group	Frequency	Percentage
Officials, administrators, managers	0	0
Professionals	5	6.0
Technicians	1	1.2
Sales	9	10.8
Administrative support (includes clerical)	9	10.7
Service	8	9.6
Farm managers and other agriculture-related	4	4.8
Forestry, logging, fishing	4	4.8
Mechanics and repairers	8	9.5
Skilled construction trades	10	11.9
Skilled factory	3	3.6
Semiskilled factory and transportation	20	23.8
Laborers	3	3.6
Total	84	100

Figure 15. Respondents who left farming: gross farm income in last year farmed.

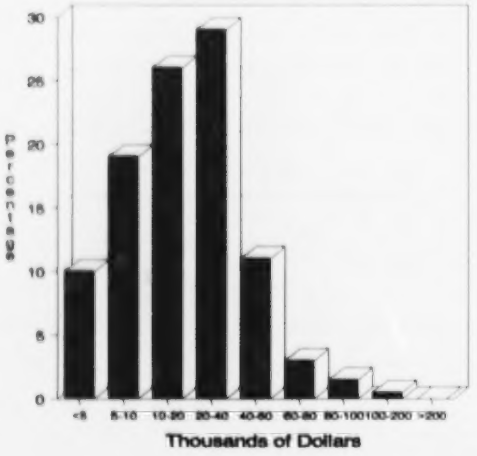


operators reported a family income below $10,000. On the other end of the income distribution, 5 percent reported a family income of over $60,000 (Figure 16).

Value of Farm

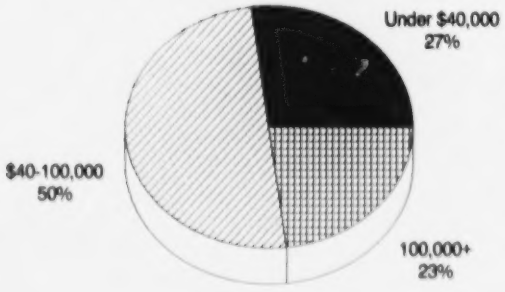
The operators who ceased farming reported a mean of about $84,000 for the market value of their farms

Figure 16. Total farm income of ex-farm operators in 1987.



at the time they quit farming. Half said the market value of their farms was between $40,000 and $100,000 (Figure 17).

Figure 17. Respondents who left farming: perceived value of farm.



Debt

Thirty-nine (20 percent) of the respondents who left farming (197) reported that their farm had some form of debt when they left. For the respondents with debt (38), the mean total amount was $61,000.

Financial Strategies

The operators who left farming were asked to indicate whether they had used any of 10 different farm financial strategies during the last year they farmed. Their responses show attempts to survive in agriculture by restructuring debt and restraining purchases (Table 14). Because the responses to these 10 questions were not mutually exclusive, a summated index was constructed. Each yes response was coded 1 and all other responses were coded 0. Among the respondents, 65 percent had a summated score of 0, indicating no use of any of the strategies, 16 percent had a score of 1, 10 percent scored between 2 and 3, and 9 percent had a score of 4 or more.

Table 14. Respondents Who Left Farming: Farm Financial Strategies During Last Year Farmed

	Percentage
Postpone interest payments on loans	8.1
Restructure loans	11.2
Make delinquent principal payments	7.6
Defer an FHA loan	3.0
Postpone major farm purchase	14.2
Postpone major household purchase	10.2
Have family member take off-farm job	7.7
Purchase more items on credit	7.6
Let life insurance lapse	7.1
Sell some land	8.6
(N=197)	

Why did they leave farming? They were asked a series of questions and then were asked to judge which of the reasons was the most important. Low income from farming and age or retirement were the predominant reasons (Table 15).

Table 15. Respondents Who Left Farming: Most Important Reason for Stopping Farming

	Percentage
Low income from farming	36.5
Age or retirement	19.3
Health	16.7
Better opportunities off-farm	13.0
Other	6.8
Lack family member to help work	4.7
Drought or lack of rain	2.1
Debt or loans; foreclosure	1.0
(N = 192)	

Respondents Who Remained in Farming Compared to Respondents Who Left Agriculture

The questions asked in the 1988 study of the operators who stayed in farming were similar to those asked of the operators who left in 1987. The average estimated value of the farm was less for the respondents who left ($96,000) than for those who stayed ($143,000). While there was no significant difference in farm debt between the groups, there were important differences in gross farm income and financial strategies. Continuing operators reported a mean 1987 gross farm income of $53,000. The operators who left reported a mean of about $29,000. Sixty-five percent of continuing farmers reported gross farm incomes of $40,000 or less compared with 82 percent of those who left. While 65 percent of those who stayed had a score of 0 on the farm financial strategy index, only 47 percent of the nonsurvivors had a 0 score. Average scores on the financial strategy index revealed

similar differentials: the mean for the survivors was 0.86, whereas it was 1.32 for the nonsurvivors. Average family income in 1987 for respondents who stayed in farming was around $48,000. For those who left, average family income in 1987 was about $30,000.

The average age of those who left farming (58 years) was slightly greater than those who remained (54 years). There was virtually no difference between the groups in average education. For the respondents who stayed in agriculture, 92.4 percent were male and 93.3 percent were white. For those who left, 89 percent were male and 84 percent were white.

Apparently, the farm operators who left agriculture had smaller operations and experienced more financial problems in 1987 than those who stayed. Comparison of the responses from the 1987 questionnaire (which asked questions about the 1986 agricultural year) revealed additional differences between the groups.

In 1986 there were large differences between the number of acres farmed and the number of acres owned. The operators who stayed in farming averaged 204 acres farmed and 83 acres owned. An average of 97 acres farmed and 50 acres owned were reported by those who had left. The operators who stayed also worked more days on their farms (about 200) than those who left (about 155). Similar percentages of both groups reported at least some off-farm work, and the average number of days of off-farm work was similar. In 1986, the average family income was $28,000 for those who stayed in farming and $24,500 for those who left. The average percentage of income from farming differed between the two, however: 42 percent for the survivors and 28 percent for the nonsurvivors.

Employment and Earnings

There were few differences in the employment status of current and former farm operators. As Table 16 indicates, the samples reported nearly identical proportions of operators working in the labor force, working for themselves, and working in supervisory positions.

Table 16. Comparison of Current and Former Operators' Employment Status

	Percentage of Current Operators	Percentage of Ex-Operators
Currently working in nonfarm labor force	39.8	42.4
Self-employed	21.1	25.0
Supervisory	44.3	39.3

There were, however, interesting differences in the occupational distributions of the samples. There were no managers among the group of ex-operators, although this group made up nearly 6 percent of the occupations of farmers. Conversely, the composition of professional work was quite different. All of the five professionals in the ex-operator group were in professions such as law, teaching, and social sciences. Farm operators with professional off-farm positions were mostly teachers or vocational counselors in elementary and high schools. Operators were more likely than ex-operators to hold lower white collar occupations, while ex-operators were more likely than operators to be employed in blue collar positions, other than farm-related jobs. Operators were much more likely to be employed in agriculture or the closely allied forestry and fishing industries (Figure 18).

Former farm operators had substantially lower household incomes than current operators, reflecting both the higher level of retirement in this group and the loss of farm income. The percentage in poverty, estimated to be about 32 percent, was three times as high as it was for those still farming and more than twice the poverty rate for all households in North Carolina. On the other end of the income distribution there were very few ex-farmers with family incomes above $60,000, and only one with an income above $100,000. Over 20 percent of farm households had incomes above $60,000, and 7.8 percent had incomes above $100,000. Clearly, ex-farmers were much worse off economically than those who continued to farm (Figure 19).

Figure 18. Occupational distribution of current and ex-farm operators.

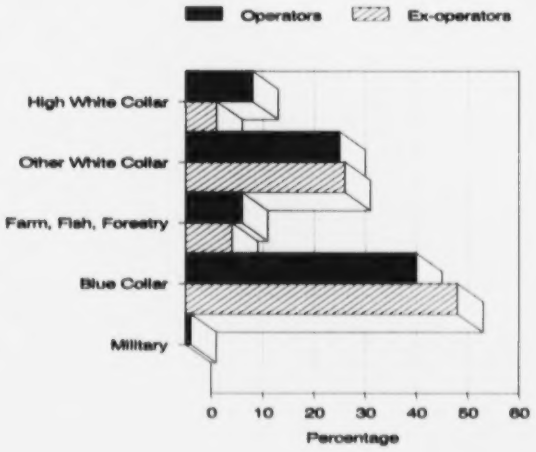
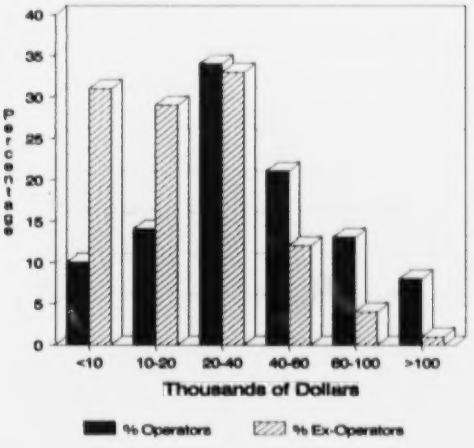


Figure 19. Operator and ex-operator total farm income distributed in percent for 1987.



Farmers' Response to Conservation

Farming depends on adequate and sustainable soil. Concerns have been raised recently about farmers' willingness and ability to practice soil conservation to an adequate degree. Recent changes in soil conservation policy were brought about by the 1985 Farm Bill. The most important of these involves conservation compliance. Under this provision, all farmers who want to remain eligible for certain USDA programs will be required to have an approved soil conservation plan for any highly erodible land by December 31, 1989. They will then have until 1995 to implement the plan. This requirement represents a dramatic change from previous policies, which relied solely on farmers' voluntary use of conservation.

Adoption of a Conservation Plan

Farmers were asked "Do you have a conservation plan prepared by the Soil Conservation Service for the farm that you operate?" Only 214 (36 percent) reported that they had a plan. Of the 391 farmers without plans, just over one-third (38 percent) said they had considered developing a plan. This means that of the sample, 238 farmers (40 percent) did not have a conservation plan and had not considered developing one. Adoption of a plan was measured on a three-point scale (1 = have no plan, never considered one; 2 = have no plan, but considered one; and 3 = already have a plan).

One important influence on farmer adoption of a conservation plan was personal contact with the North Carolina Agricultural Extension Service (Table 17 and Figure 20). Over one-half (53 percent) who reported having had a county Extension agent on their farm during the previous two years had adopted a conservation plan. On the other hand, only one-fifth (21 percent) who had not received a visit from an Extension agent had a conservation plan.

Table 17. Factors Related to Conservation Compliance

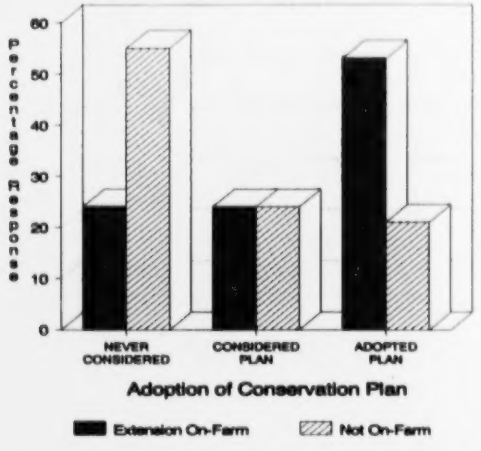
	Adoption of Conservation Plan	Awareness of Conservation Compliance	Fairness of Conservation Compliance
		Correlation coefficients	
Personal characteristics			
Education	.19***	.14***	.15***
Age	.14***	.08*	.05
Farm characteristics			
Total acres	.20***	.16**	.01
Acres owned	.17***	.14**	.01
Contact with Extension			
On-farm visit	.36***	.21***	.08
Meeting or publication	.31***	.30***	.10*
Importance of Extension	.33***	.19***	.13**
Economic factors			
Gross farm income	.20***	.18***	.01
Total family income	.14***	.15***	.08
Total assets	.19***	.13**	.09*
Total debt	.16***	.12**	.03
Debt-to-asset ratio	.12**	.10*	.01

* means p<.05, ** means p<.01, and *** means p<.001

those farmers who did not have a conservation plan and had not considered one had not attended an Extension meeting or read an Extension publication. Over 40 percent who had attended an Extension meeting or read an Extension publication had a plan, compared with only 16 percent of those who did not report contact with Extension.

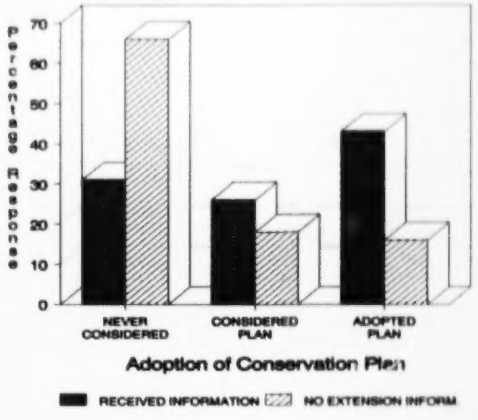
Farmers' personal characteristics also influenced their adoption of a conservation plan (Table 17). Farmers with more education were more likely to have considered or adopted a plan. Younger farmers were more likely to have considered or adopted a plan than were older farmers. Full-time farmers (that is, those who did not work off the farm) were more likely to have adopted a plan. Over 40 percent of full-time

Figure 20. Adoption of a convervation plan and on-farm visit from Extension.



The important influence of the Extension Service was also evident when we compare farmers who had attended an Extension-sponsored meeting or read an Extension publication with those who had not (Figure 21 and Table 17). Two-thirds of

Figure 21. Adoption of a conservation plan in relation to attendance at an Extension meeting or reading of an Extension publication.



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farmers had a conservation plan, compared with less than 30 percent of part-time farmers.

Economic factors are also related to farmers' adoption of conservation plans (Table 17). Total family income and gross farm income were both positively related to adoption of a plan. Farmers with greater farm assets were more likely to have a plan. Higher levels of debt and greater use of credit were also positively related to adoption of a plan. Farmers who had adopted a plan tended to have higher debt-to-asset ratios.

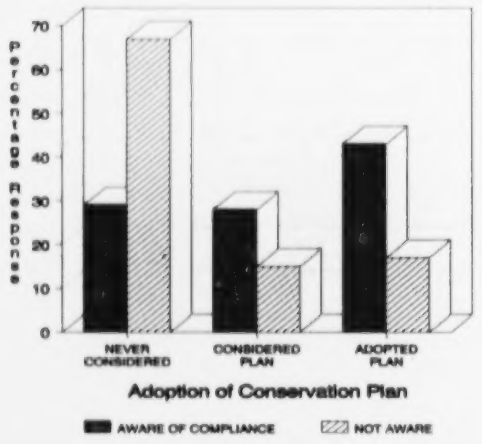
The nature of the farmers' operation also may have influenced adoption of conservation plans. Farmers with larger farms were more likely to have adopted a plan. Farmers with plans also tended to own more farm land. The main type of crops or livestock raised also influenced farmers' adoption of conservation plans. Those who produced poultry, swine, or beef cattle as their main source of farm income were least likely to adopt a plan. Peanut growers and dairy producers were most likely to have a plan.

Most of these plans tended to be relatively new, with 84 of the respondents (39 percent) having developed their plan in the last four years. Respondents reported considerable variability in implementation of their conservation plans. Of the 214 farmers with a plan, only one-third (35 percent) claimed they had implemented 100 percent of the plan's recommendations. This means that only 12 percent of the respondents would now be ready for the 1995 deadline. Over one-third of the farmers with plans reported they had implemented 50 percent or fewer of the recommendations.

Awareness of Conservation Compliance Requirements

Another important influence on farmers' adoption of a conservation plan should be their awareness of conservation compliance requirements. Farmers were asked "Have you heard that farmers who do not have a conservation plan by 1990 for their erodible land will not be eligible for some USDA program benefits?" Despite fairly wide publicity during the previous year, almost 30 percent had not heard of the conservation compliance requirements.

Figure 22. Adoption of a conservation plan and awareness of conservation compliance requirements.



There is a relatively strong relationship between awareness of compliance requirements and adoption of a conservation plan (Figure 22). Less than one-fifth (18 percent) of those who were not aware of compliance requirements had adopted a conservation plan, compared with 43 percent of those who had heard of the requirements. In fact, two-thirds (67 percent) of those who had not heard of the compliance requirements had not even considered getting a plan. Almost 30 percent of those who had heard of conservation compliance requirements had *not* considered getting a conservation plan.

Extension Service contact has a strong, positive relationship with awareness of compliance requirements. Most (82 percent) of the farmers who had a visit from an Extension agent were aware of conservation compliance requirements, compared with only 63 percent of the farmers who had not had an on-farm visit. The difference is even greater when we consider farmers who reported attending an Extension-sponsored meeting or reading an Extension publication during the previous two years. Again, 80 percent of those who had this Extension contact were aware of conservation compliance requirements. On the other hand, less than half (48 percent) of those who did not have this contact with Extension were aware of compliance requirements.

Many of the relationships observed between other variables and awareness of conservation compliance requirements are similar to those ob-

served for adoption of a conservation plan (Table 17). Farmers who were aware of compliance requirements had more education than those who were not aware, but the groups did not differ in age. Those farmers with larger operations also were more aware of compliance requirements. The type of crop or livestock that served as the main source of farm income also affects awareness. Only one-half who raised poultry (53 percent) or wheat and other small grains (48 percent) were aware of the requirements. On the other hand, almost all the tobacco growers (85 percent) and dairy producers (81 percent) were aware.

Farmers who were aware of conservation compliance requirements had higher family and gross farm incomes, greater farm assets, higher levels of debt, more reliance on credit, and higher debt-to-asset ratios.

Perceived Fairness of Conservation Compliance Requirements

When asked "Do you think this policy (that is, compliance with conservation requirements) is fair?" respondents were evenly split: 46 percent said it was fair, 45 percent thought it was not fair, and 7 percent had no opinion. Perceived fairness of conservation compliance requirements was related to the adoption of a conservation plan. Of those farmers who considered compliance requirements fair, 43 percent had a conservation plan. Of those who considered them unfair, less than one-third (31 percent) had a plan. For those farmers who had never considered getting a plan, 56 percent felt compliance requirements were unfair.

Perceived fairness of the conservation compliance requirements was also related to awareness of them. Those who were aware of compliance requirements were also more likely to feel that they were fair. More of those who had attended an Extension-sponsored meeting or used Extension publications (53 percent) saw compliance requirements as fair than did those who did not report such Extension contact (41 percent). Farmers who perceived compliance requirements as fair also tended to have higher levels of education.

Those farmers who were more likely to perceive conservation compliance requirments as fair included farmers with the following enterprises: dairy (71 percent); beef cattle (60 percent); wheat or small grains (60 percent); peanuts (59 percent); and soybeans (58 percent). Those who were less likely to see the requirements as fair included those who produced mainly corn (47 percent); fruits and vegetables (47 percent); swine (44 percent); tobacco (40 percent); and poultry (37 percent).

At the time of our survey, many North Carolina farmers were not in compliance with the conservation provisions of the 1985 Farm Bill. It is important to keep in mind that considerable progress on conservation planning has no doubt been made since this survey was conducted in February of 1988.

In fact, this survey took place at the same time that a series of in-service conservation training sessions were held for county Extension agents and SCS district conservationists. These sessions provided local staff members with information and incentives to promote greater awareness of conservation compliance requirements and adoption of conservation plans.

This study shows that certain groups of farmers are more likely to be aware of conservation compliance requirements and more likely to have adopted a conservation plan. These differences have important implications for educational programs and public policies. Farmers who are more likely to adopt conservation practices tend to have larger operations, more education, and greater contact with the Extension Service and other agencies, and they are better off financially. These same relationships appear to hold for adoption of conservation plans. Educational efforts must therefore be targeted to those farmers who are least likely to have a conservation plan or be aware of conservation compliance requirements. Farmers who raise crops that are most dependent on federal financial assistance programs will have the most to lose if they are not in compliance with the conservation provisions of the 1985 Farm Bill.

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Response to Drought

Water shortages can mean serious financial problems for farmers. Many parts of North Carolina experienced severe droughts during the past three years. In the 1988 resurvey of North Carolina farm operators we tried to document and explain the severity of crop and livestock losses to drought during 1986 and 1987. We also examined farmers' use of federal assistance and irrigation.

Severity of Drought Impacts

The timing and amount of precipitation varied widely across the state and within local areas during the last few years. To assess drought impact on farming operations, respondents were asked "Did you experience any crop or livestock losses as a result of drought during the past two years (1986 and 1987)?" Almost two-thirds (63.4 percent) said they had experienced crop or livestock losses. Those who had experienced losses were then asked "Would you say your losses due to drought in the last two years were very serious, somewhat serious, or not very serious?" Over one-half (57 percent) said their losses were very serious, 31 percent said the losses were somewhat serious, and 12 percent said the losses were not very serious.

Drought appeared to be more severe for farmers in certain parts of the state. Figure 23 shows the average severity of drought in the eight Extension districts. Farmers in the northeastern district reported the most serious drought losses. The least serious drought losses were in the western, northwestern, and south central districts.

Farmers with certain types of crops or livestock were hit hardest by the drought. Table 18 shows that peanut and soybean producers reported the greatest drought losses. Those who produced mainly tobacco, corn, and wheat (and other small grains) were less seriously affected. Of those farmers who derived most of their income from livestock, dairy producers reported the most serious losses. Pork producers experienced moderate losses. Those who produced mainly poultry or beef indicated they had experienced few or no losses.

Farmers with more serious drought losses were more likely to have sought information or assistance from the North Carolina Agricultural Extension Service. Those with more serious losses were more likely to have had an on-farm visit from a county Extension agent. They were also more

Figure 23. Average severity of drought by Extension districts.

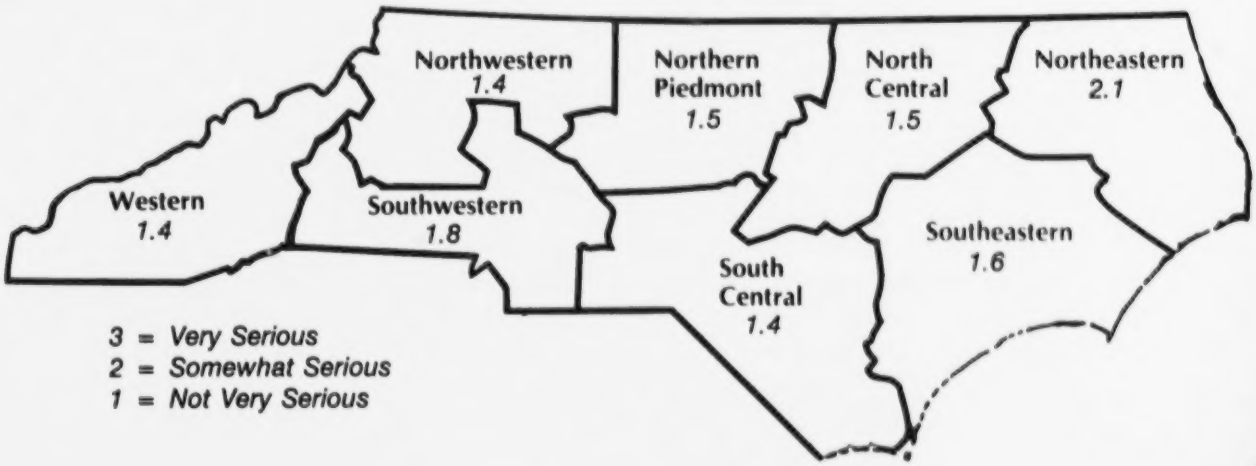

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Table 18. Severity of Drought, Federal Assistance, and Use of Irrigation in Relation to Most Important Type of Crop or Livestock

	Number of Farmers	Severity of Drought[1]	Percentage of Farmers Received Assistance	Percentage of Farmers Used Irrigation
Type of Crop				
Tobacco	138	1.6	14	44
Soybeans	26	2.0	19	3
Corn	24	1.6	21	13
Wheat	16	1.6	25	4
Peanuts	15	2.4	20	11
Type of Livestock				
Beef	134	1.4	21	9
Pork	31	1.6	32	23
Poultry	30	1.3	33	3
Dairy	21	2.1	41	19

Note: Respondents were asked "Of the crops and livestock you raised in 1987, which was the most important for your gross farm income?" Many farmers in this study, therefore, were probably producing more than one commodity.

[1]Severity of drought is measured as: 0 = no crop or livestock damage; 1 = not very serious losses; 2 = somewhat serious losses; and 3 = very serious losses.

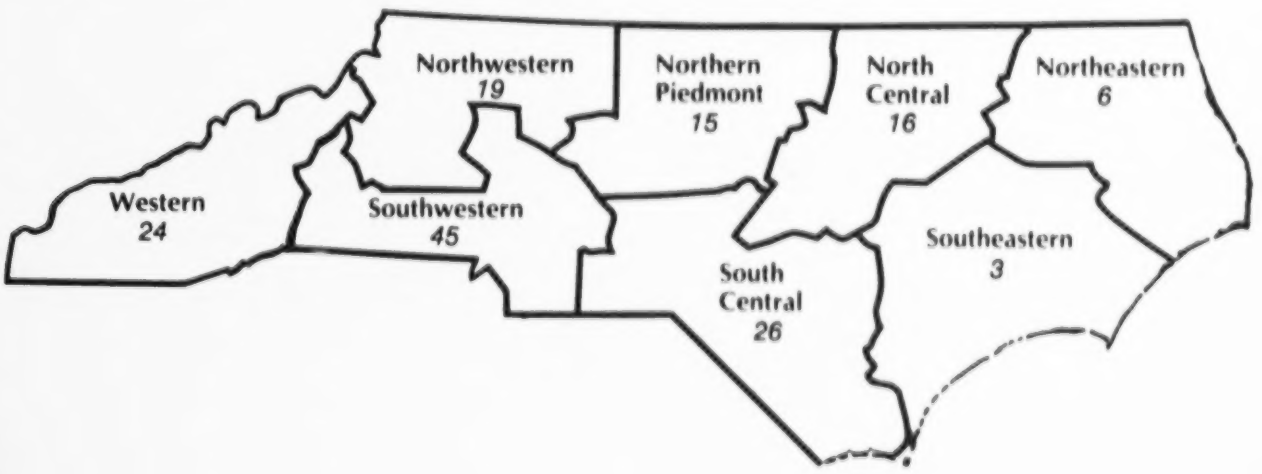
likely to have attended an Extension-sponsored meeting or to have read an Extension publication. Those with more serious losses saw Extension contacts as more important to their farm operation.

Use of Government Drought Assistance

During prolonged periods of drought, federal financial assistance is often given to farmers in the harder hit areas. Such financial assistance generally takes the form of low-interest loans or cost-sharing funds for emergency measures and is granted for losses in specific commodities. Respondents who reported that they received financial assistance would have had drought losses in 1986. To ascertain perceptions of drought loss and the distribution of federal drought assistance, we asked "Have you received any federal financial assistance because of your drought losses?" Most (79 percent) reported they had *not* received any assistance.

Farmers in certain parts of the state were more likely to receive some form of federal financial assistance because of their drought losses. Figure 24 shows the general pattern of federal assistance. Almost one-half (45 percent) of the farmers in the southwestern district received such assistance. About one-fourth in the western and south central

Figure 24. Percent of respondents receiving federal financial assistance for drought losses.



23

districts received assistance. Less than one-fifth of the farmers in the northern half of the state reported receiving assistance. Farmers in the coastal plain were least likely to have received assistance.

There was not much difference in financial assistance based on the crops or livestock that respondents said were their most important source of income (Table 18). The percentage of crop-raising farmers who received assistance ranged from 14 (tobacco) to 25 (wheat). Those who produced livestock also varied in terms of their use of assistance. Dairy farmers were more likely to have received assistance than were beef producers.

Farmers who received assistance were more likely to have had an on-farm visit from a county Extension agent. They were also more likely to have attended an Extension-sponsored meeting or to have read Extension publications. Overall, those who had received such assistance rated Extension as more important to their operations than did those who had not received such assistance.

Use of Irrigation

One way to minimize water shortage losses is to irrigate. Respondents were asked "Do you presently use irrigation on any of the land that you farm?" Less than one-fourth (24 percent) reported irrigating. Many had been irrigating for quite a while. Of those farmers who irrigated, 10 (7 percent) began the practice in the 1950s. Almost one-third (31 percent) began irrigating during the 1960s. Thirty-eight (27 percent) adopted irrigation in the 1970s. About one-third of those with irrigation systems (34 percent) began using them during the last eight years.

Farmers who were using irrigation were more likely to have had an on-farm visit from a county Extension agent, to have attended an Extension-sponsored meeting, or to have read Extension publications. Respondents who used irrigation rated the Extension Service as more important to their operation than did those who did *not* irrigate.

One surprising finding is that farmers who irrigated did not generally report less serious drought losses than farmers who did not irrigate. An expected finding involves the relationship between drought and farmers' financial situations. Those farmers with total gross farm incomes over $100,000 reported significantly more serious drought losses than did those farmers with gross incomes under $20,000.

This study shows that certain types of operations in specific parts of the state were more affected by drought than others. Both financial and educational assistance will be important in helping farmers cope with future droughts. Drought assistance and education efforts must be targeted to those commodities and locations where the drought impacts are most severe.

Stress Among Farm Operators

The image of farming as a tranquil, stress-free occupation is largely a myth. Because of a lack of control over determining factors such as weather, equipment costs, interest rates, and commodity prices, farming can be very stressful. One purpose of the Farm and Rural Life Study is to determine the levels of stress experienced by North Carolina farmers. To do this, we asked a series of questions about feelings of stress in everyday life (Table 19).

By assigning numbers to each category of answer (that is, often experiencing a problem = 3, sometimes = 2, and never = 1) and then adding these numbers for the eight stress questions, it was possible to create a stress index score for each respondent. In the sample, these index scores ranged from 8 to 20, with the average being 12.

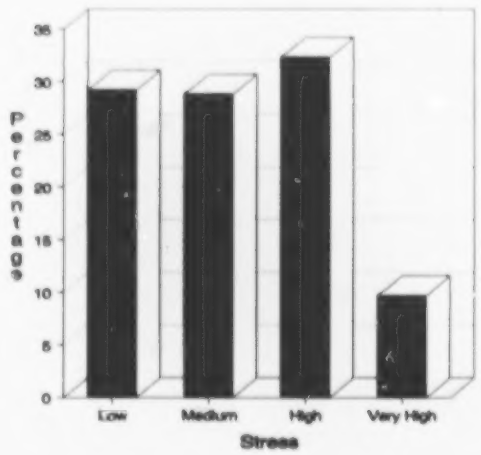
Table 19. Feelings of Stress in Everyday Life

	Percentage		
	Never	Sometimes	Often
Things that happen unexpectedly	47	48	5
Felt things were going their way	7	45	47
Often felt nervous and distressed	44	47	9
Able to deal successfully with irritating problems	8	36	52
Confident about ability to handle personal problems	3	19	78
Angered because of things outside of their control	43	50	7
Able to control use of time	7	36	57
Not able to overcome difficulties	67	25	5

Using these scores it was possible to compare the levels of stress experienced by different groups of respondents.

Before making comparisons, we looked at the results for all respondents. Figure 25 shows the percentage of respondents falling into low, medium, high, and very high stress categories, based on their stress index scores (low = 8 to 10, medium = 11 to 12, high = 13 to 15, and very high = 16 to 20). We see that 29 percent were in the low stress category, 29 percent were in the medium category, 32 percent were in the high category, and 10 percent were in the very high category.

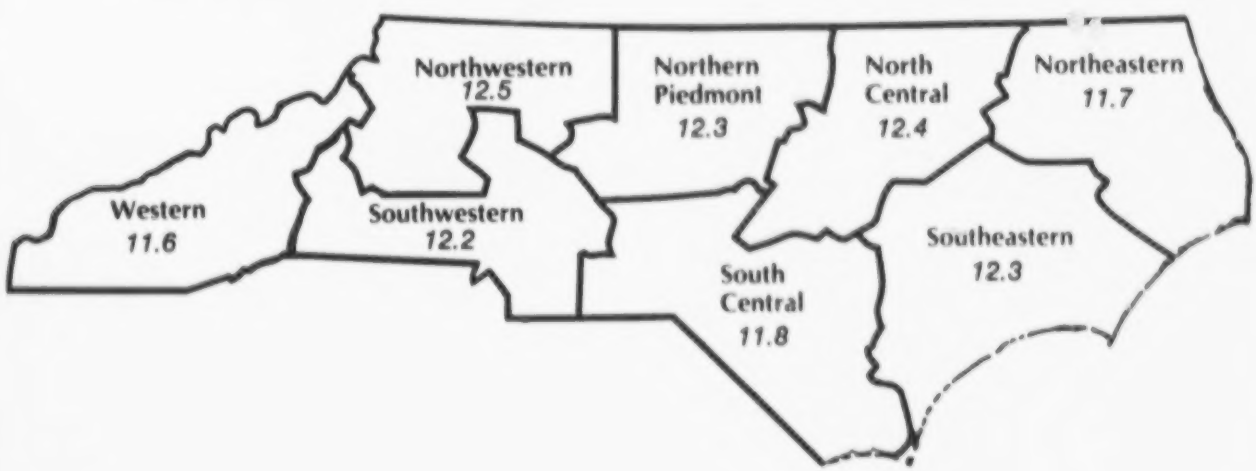
Figure 25. Level of reported stress.



Next, we compared stress levels among Extension Service districts. Remember that the overall average stress index score was 12. Figure 26 shows the scores for each Extension district. Respondents in the northeastern, south central, and western districts reported slightly below-average levels of stress. Those in the other districts reported slightly above-average levels.

Other comparisons showed differences in stress between men and women and across income

Figure 26. Average stress index scores by Extension districts.



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and age levels. The 44 female farm operators for whom we have complete data reported slightly higher levels of stress (average score = 13) than male operators (12). Not surprisingly, income was related to stress: the highest index score (13.6) appeared for those in the lowest (under $5,000) annual family income category. By comparison, the average score for those with annual family income above $60,000 was only 11.8. Age also showed a relationship to stress, with younger operators tending to report slightly higher levels of stress. No significant difference appeared between white and nonwhite farm operators.

Health of Farm Operators

We also asked a series of questions to determine the health of farm operators. The first set of these asked respondents to indicate whether they often, sometimes, or never experienced any of 10 common health problems. The results for the sample as a whole are given in Table 20.

Table 20. Health of Farm Operators

	Percentage		
	Never	Sometimes	Often
Shortness of breath or chest pains	71	24	5
Unable to relax or fall asleep	64	29	6
Headaches	66	31	2
Stomach pain	82	14	2
Coughing in the morning	82	14	3
Exhausted for no apparent reason	75	22	3
Swelling or stiffness in the joints	60	31	9

As with stress, we created a health index score for each respondent based on answers to these health questions. An answer of often was scored 1, sometimes was scored 2, and never was scored 3, so that a high index score indicated good health. The index scores ranged from 9 to 21, with the overall average at about 19. These scores were used to compare the health status of different groups.

Before making comparisons, we examined some results for the whole sample. Figure 27 shows the percentages of respondents falling into poor, fair, and good health categories (poor = 9 to 16, fair = 17 to 19, and good = 20 to 21). Seventeen percent fell into the poor health category, 37 percent fell into the fair category, and 46 percent were in the good category.

Figure 27. Percentage reporting good, fair and poor health.

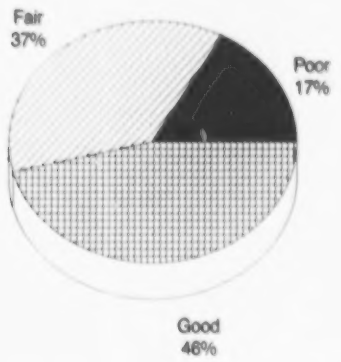

Figure 28 shows average health index scores for each Extension Service district. The northwestern and northern piedmont districts were right at or near the average of 19; the north central, southeastern, and western districts were slightly below the average; and the northeastern, south central, and southwestern districts were slightly above it.

Some other differences in health between groups were evident. Males had a slightly higher average index score (19) than female operators (18). Those with annual family incomes below $20,000 had below-average health index scores, and those in the $5,000 to $20,000 range had the lowest average score of any group. The group with annual family incomes above $80,000 had above-average scores. Not surprisingly, younger farm operators tended to have slightly above-average health index scores, whereas older farm operators tended to have slightly below-average scores. There was no difference between white and nonwhite farmers.

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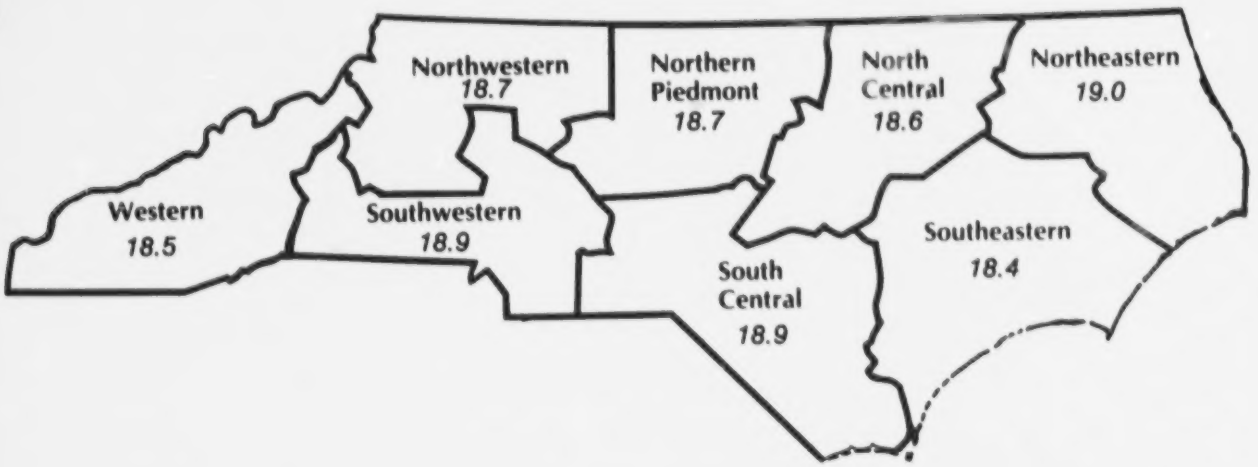
Figure 28. Average health index scores by Extension district.



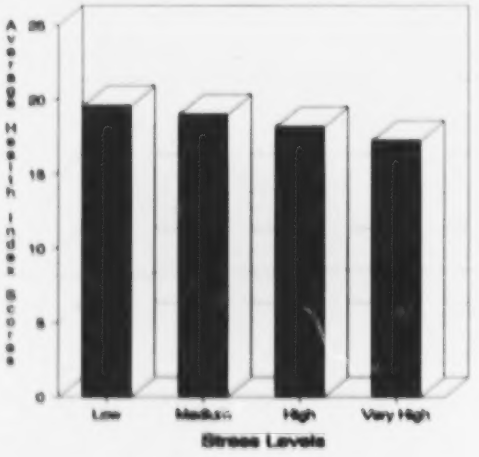
We asked several additional questions about health and health-related behaviors. Among all respondents we found that:

- 18 percent were experiencing a chronic health problem that sometimes interfered with their work or recreation.
- 24 percent smoked.
- 10 percent had experienced or had a member of the family experience an on-farm injury serious enough to require a visit to a doctor or loss of a day's work or school.
- 7 percent had no health insurance.
- 15 percent felt they often or sometimes had too little money during the past year to afford the kind of medical care they wanted for themselves or their family.

The Link Between Stress and Health

Stress and health are important in their own right. Each is an indicator of the quality of life of farm operators. But stress and health are also linked. Much social scientific research has shown that stress can damage health. Some research has also shown how health problems can amplify stress. In future analyses of the data we will be examining the nature of these health-stress connections. Here we offer some preliminary findings.

Figure 29. Average health index scores and level of stress.



Using the index scores discussed above, we looked at some connections between stress and health among the sample. Figure 29 shows the average health index scores for respondents falling into the low, medium, high, and very high stress categories. High stress was consistently associated with poorer health. Those in the low stress group had the highest average health index score (19.6);

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while those in the very high stress group had the lowest score (17.2).

The connection between stress and health was explored by cross-tabulating the categories created with the two index scores. This analysis showed that 65 percent of those in the low stress category also fell into the good health category, while only 7.6 percent fell into the poor health category. At the other extreme, 40.4 percent of those in the very high stress category also fell into the poor health category, whereas only 26.3 percent of those who reported very high stress also reported good health.

These results are consistent with previous studies. We should caution, however, that the stress-health relationship is not as simple as these preliminary findings might suggest. First, not all stress is necessarily harmful. And second, many other factors—such as social support and individual coping mechanisms—determine whether severe stress actually harms health. Further analyses will look at the more complex interactions between stress, coping, social support, and health.

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